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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,663	12/06/2001	Umang Anand	JHUKA1	8701

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EXAMINER

NGUYEN, DUNG V

ART UNIT PAPER NUMBER

3723

DATE MAILED: 06/25/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

10/010,663

Applicant(s)

ANAND ET AL.

Examiner

Dung V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 13, 26, 39 and 52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "minimum" in claims 13, 26, 39 and 52 is a relative term which renders the claim indefinite. The term "minimum" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It's not clear what is a minimum blocking of the pores.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 6-12, 14-17, 19-25, 27-30, 32-38, 40-43 and 45-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Katz (USPN 5,921,846). Katz discloses an abrasive, fluid cutting apparatus comprising a chamber 2 having an inlet for receiving a pressurized fluid jet, a port for receiving a flow of abrasive particles which are entrained into the fluid jet, and an exit through which the fluid jet and entrained abrasive

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exit the chamber 10, a mixing tube 7 having an entry port for receiving the fluid jet and entrained abrasives, an inner wall for directing the flow of the fluid jet and entrained abrasives, and an outlet port 9 through which the fluid jet and entrained abrasives exit the tube 7, wherein the tube entry port is proximate the chamber exit, a lubricating fluid reservoir 6 that surrounds at least a portion of an outer wall of the mixing tube 7, wherein at least a portion of the mixing tube wall being porous, wherein the lubricating fluid passes from the lubricating reservoir 6 and through the porous wall to lubricating at least a portion of the surface of the mixing tube wall so as to resist erosion of the tube wall while the fluid jet and entrained abrasives flow through the mixing tube 7, wherein the smallest cross sectional dimension of the passage connecting the mixing tube inlet and outlet ports is 500 microns, wherein the abrasive particles have an average diameter of less than half of the smallest cross sectional dimension of the passage connecting the mixing tube inlet and outlet ports, wherein the lubricating fluid having a kinematic viscosity whose ratio with the kinematic viscosity of the jet's carrier fluid is 40/1, wherein the thickness of the mixing tube wall is varied along its length to control the flow rate of the lubricating fluid, wherein the mixing tube wall have variable porosity along its length to control the flow rate of the lubricating fluid, wherein the porous mixing tube being fabricated from a porous ceramic material, porous metal, sintered porous material and made by a molding process. Katz also discloses a method for reducing erosion on the inner wall of a cutting jet mixing tube comprising the steps of forming a mixing tube 7 so that at least a portion of its wall is porous, surrounding at least a portion of the outer wall of the mixing tube wall with a lubricating fluid reservoir 6 and

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forcing lubricating fluid to pass from the lubricating reservoir 6 and through the porous wall to form a lubricating film between the mixing tube wall and the flow of abrasive fluid (note Fig. 1A-1C, col. 2, line 45 to col. 5, line 21).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 18, 31 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz (USPN 5,921,846). Katz discloses the claimed invention as described above, however, Katz does not disclose a ratio of flow rate of lubricating fluid and flow rate of fluid jet and entrained abrasive is in a range of 1/10,000 – 1/20. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a ratio of flow rate of lubricating fluid and flow rate of fluid jet and entrained abrasive is in a range of 1/10,000 – 1/20, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. Claims 13, 26, 39 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katz (USPN 5,921,846) in view of Massa et al (USPN 6,425,805). Katz discloses the claimed invention as described above, however, Katz does not disclose the mixing tube is made by using electric discharge machining. Massa et al disclose making a mixing tube by using electric discharge machining (note Fig. 4, col. 9,

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line 15 to col. 10, line 67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to use electric discharge machining as disclosed by Massa et al in order to form a taper entry port of the mixing tube. The claims are product-by-process claims, limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claims are unpatentable even though the prior art product was made by a different process.

Response to Amendment

9. The declaration under 37 CFR 1.132 filed on 6 May 2003 is insufficient to overcome the rejection of claims based upon rejection as set forth in the last Office action because: it does not clearly point out the patentability of the invention. The declaration only provides the references that are related to the invention. The references amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

10. In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Response to Arguments

11. Applicant's arguments filed on 6 May 2003 have been fully considered but they are not persuasive. In response to applicant's argument that the examiner commits clear errors in the rejection and misunderstands the difference between the elements in

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the abrasive water jet (AWJ) cutting head of the present invention and abrasive water suspension jet (AWSJ) cutting head of reference '846. When applying prior art for determining the patentability of the claims, structure limitations are used, not the exact terms. The "chamber" identified by number 2 in reference '846 has the same structure limitation with the "chamber" identified by number 10 in the present application and the "nozzle" identified by number 7 in reference '846 has the same structure limitation with the "mixing tube" identified by number 10 in the present application. Fig. 1A, 1B and 1C and col. 2, line 45 to col. 3, line 10 of reference '846 clearly shows "a chamber 2 having an inlet for receiving a pressurized fluid jet, a port for receiving a flow of abrasive particles which are entrained into the fluid jet, and an exit through which the fluid jet and entrained abrasive exit the chamber 10" and "a mixing tube 7 having an entry port for receiving the fluid jet and entrained abrasives, an inner wall for directing the flow of the fluid jet and entrained abrasives, and an outlet port 9 through which the fluid jet and entrained abrasives exit the tube 7, wherein the tube entry port is proximate the chamber exit" as claimed.

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung V Nguyen whose telephone number is 703-305-0036. The examiner can normally be reached on M-F, 6:30-3:00.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail can be reached on 703-308-2687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

16. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

DVN
June 20, 2003



Dung Van Nguyen
Patent Examiner